Tom Snyder Productions®

Fizz® & Martina's® Math Adventures™

Lights, Camera, Fractions!

Mac/Win CD-ROM

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Credits

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or visit our Web site at

www.teachtsp.com

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Contents

Foreword

Interactive Group Software

Fizz & Martina's Math Adventures is a type of technology-based product called Interactive Group Software. This genre of software uses technology to get people in a group to interact, not with a machine, but with each other. Interactive Group Software is ideal for classroom use and is based on three important educational beliefs.

1. Students learn best when they explain

Progressive educational theory has historically been dominated by the works of Jean Piaget. His studies on cognitive development suggest that most of the action for learning takes place inside of our heads. Language, in this scheme, is the result of thought. While Piaget promoted his views in the limelight, another great psychologist, laboring in the relative obscurity of Stalinist Russia, suggested something different. Lev Vygotsky, whose work in the first half of the 20th century is still just coming to the fore in this part of the world, found that language and thinking are interdependent. The process of creating language, of articulating ideas and understanding to someone else, is a critical step in building personal understanding. The most powerful learning happens when individuals in a group negotiate shared meaning. Educators are now agreeing: language unleashes true understanding. The primary goal of Interactive Group Software in the school is to get students to explain relevant content and concepts to each other.

2. Teamwork is a new and essential basic skill

For the first 100 years of the industrial revolution, the goal was to manufacture more products faster than anyone else. Since people (consumers) had so few goods, the first to produce would likely be the first to sell. Any old warm body on the assembly line would do. But no longer. Increased competition and affluence have made price and quality ever more important in distinguishing one product or service from another. Workers at all levels need to be able to identify ways to improve quality and reduce cost. And they need to be able to articulate their observations and suggestions to others, their teammates. So it's not surprising that economists, educators, and business leaders have begun to list teamwork as a basic skill for employment and success in life. Technology and the information age, rather than isolating us, have made it even more important to be able to communicate and work together.

3. The teacher is important

Interactive Group Software respects teachers and acknowledges their importance in determining curriculum and orchestrating successful classrooms. In fact, Interactive Group Software, like other successful classroom technologies, requires a teacher. The teacher sets the curricular agenda and the pedagogical tone of the classroom. It is the teacher who is sensitive enough to recognize student problems and to respond with genuine care. Whether as an incredible group organizer or a dynamic presenter, the teacher shoulders the responsibility for motivating and guiding student learning. After all, the teacher is the one who will ultimately be held accountable for student performance. Interactive Group Software is designed to assist teachers in that heroic effort.

David Dockterman, Editor-in-Chief
Tom Snyder Productions

About *Fizz & Martina's Math Adventures*

Fizz & Martina's Math Adventures is a series of elementary-school CD-ROM titles that helps students understand and apply important basic math concepts. At the heart of each title is an exciting animated adventure story, starring Fizz and Martina (two curious and creative kids from the town of Blue Falls). When math problems arise in the story, students work in teams to find solutions and articulate their strategies. This process helps students build skills in three important areas:

1. Problem Solving in Context

As students solve the problems that arise in *Fizz & Martina's Math Adventures*, they practice a range of essential problem-solving skills. They watch and listen for important information, identify relevant data, choose the appropriate arithmetic operations, and compute the answers. Unlike typical story problems, each math problem emerges naturally within a compelling narrative context and has dramatic consequences. Students are drawn into the adventures, and can't help becoming invested in the mathematics at hand!

2. Mathematical Communication

According to the NCTM standards, the ability to communicate mathematically is one of the five most important steps in achieving mathematical literacy. Ongoing research (and the intuitions of many teachers) inform us that "talking math" reinforces an understanding of basic math skills, while promoting longer retention of these skills. Throughout *Fizz & Martina's Math Adventures,* students describe mathematical ideas and strategies in complete sentences, both written and spoken — and *without* using any numbers! As students work to explain their mathematical strategies in clear, everyday language, they must demonstrate a real understanding of the concepts involved.

3. Teamwork

Like other Interactive Group Software products, *Fizz & Martina's Math Adventures* uses a cooperative approach that requires discussion and the sharing of ideas among students. The Fizz & Martina process also has built-in incentives that encourage students of all abilities to coach one another. As students articulate their ideas to others, their own understanding deepens. In addition, students develop important skills such as sharing responsibility, listening to others, and resolving conflicts.

How Long Does It Take?

Typically, it takes five class periods to complete this Fizz & Martina title — up to one class period for the Intro Activity and a full class period for each of four episodes (not including follow-up activities). Each episode involves two context-rich math problems in which students follow a sequence of activities: watch the video and take notes; work in teams to complete the three Team Questions; share answers orally and (if correct) receive awards. This package also includes optional follow-up activities and homework to accompany each episode.

The Fizz & Martina Process

Fizz & Martina's Math Adventures employs a simple, effective three-step process. The goals of this process are to encourage mathematical communication using accurate math language, to increase comprehension, and to develop listening and writing skills. For detailed information on each of the steps, consult the WalkThrough on pages 9–18.

Step 1: Watch & Listen

Students, arranged in teams, watch and listen to the animated story. They record important numbers and information on the Video Notes worksheet. Eventually, the characters in the story encounter a math problem.

Step 2: Write & Coach

Team members work together to complete the three questions on the Team Questions worksheet. Students must solve the problem posed in the story, draw and describe a picture (without using numbers!) showing how they found this solution, and describe the consequences for specific characters.

Step 3: Team Quiz

For each question on the Team Questions worksheet, the teacher picks a team at random (using the Team Picker feature), and then chooses a student on the team to answer the question. The student must answer without looking at his or her written work. If a student's written and spoken answers are correct (based, of course, on the teacher's judgement), the teacher gives an "award card" to every student on that team (emphasizing that each member's contribution was important).

Follow-up and Homework

Optional follow-up activities reinforce and expand on the skills students have learned.

- **Trivial Computes** test recall and provide additional computation practice.
- **The Estimation Game** encourages students to use and explain computational estimation strategies.
- **Homework** problems offer additional problem-solving practice.

Learning Objectives

Fizz & Martina's Math Adventures gives students the opportunity to practice important basic math skills. In addition, the program builds essential skills in problem solving, mathematical communication, and teamwork — as vehicles towards deeper understanding.

As they use this CD-ROM, students will practice and develop skills in the following areas:

Computation and Estimation

- fraction concepts (wholes and parts; naming, writing, and drawing fractions; comparing fractions)
- multiplication and division with one-, two-, and three-digit numbers
- computational estimation with fractions

Problem Solving

- careful observation and note taking
- identifying relevant data
- choosing and performing the appropriate operation
- presenting and evaluating answers

Mathematical Communication

- discussing mathematical ideas with teammates
- writing about mathematical ideas and strategies
- presenting mathematical ideas orally
- relating everyday language to mathematical language

Teamwork

- sharing a common goal
- listening and talking with others
- becoming members of an interdependent group

NCTM Standards Match

- Mathematics as communication
- Mathematics as problem solving
- Fractions
- Estimation

NCTM Instructional Practices Match

- Cooperative work
- Discussion of mathematics
- Writing about mathematics

What You Get & What You Need

What You Get

- ***Fizz & Martina's Math Adventures*** **CD-ROM** (including *Fizz & Martina's Math Adventures* software, electronic teacher's guide, and QuickTime™ and Adobe Acrobat™ Reader for Macintosh and Windows)
- **Teacher's Guide** with reproducible worksheets
- **Award Cards** (15 sheets of 12 cards)
- **A great experience**

What You Need

<table>
<tr><th>Computer</th><th>System</th><th>RAM</th><th>Monitor</th><th>Optional</th></tr>
<tr><td>At least a Macintosh LC 475 (68040 processor) or higher</td><td>7.1 or later</td><td>8 megs</td><td rowspan="4">640 x 480

Recommended:
displays thousands of colors

Minimum:
displays 256 colors</td><td rowspan="4">Optional, but recommended:
• Large screen display system (e.g., TV monitor and scan converter)
• External speakers</td></tr>
<tr><td>Macintosh Power PC</td><td>7.1 or later</td><td>16 megs</td></tr>
<tr><td rowspan="2">IBM-compatible 486 or higher with sound card</td><td>Windows 3.1</td><td>8 megs</td></tr>
<tr><td>Windows 95 & 98</td><td>16 megs</td></tr>
</table>

- **Computer with CD-ROM drive** — Refer to the chart above to determine the requirements for your computer.
- **Copies of the reproducible worksheets** — Reproducible masters are found on pages 41–68 of this guide. For information on the specific worksheets needed for each activity, see the Content Guide & Answer Key on pages 27–35.

WalkThrough

This section steps you through the process of using *Fizz & Martina's Math Adventures* in your classroom.

Note: You'll find special suggestions on classroom organization, creating and managing groups, and other tips in italics. These comments are based on the experiences of teachers who have used the program in their classrooms.

Preparation and Materials

1. Plan class time

Plan to spend 20 minutes on the Intro Activity and one 45-minute class period on each of the four episodes (*not* including follow-up activities).

2. Gather the necessary materials

- *Fizz & Martina's Math Adventures* CD-ROM
- award cards — 15 sheets of perforated cards are included (Call us at **1-800-342-0236** to reorder. You can also photocopy the master on page 69 or print a copy from the electronic teacher's guide on the CD-ROM.)

3. Copy the necessary worksheets

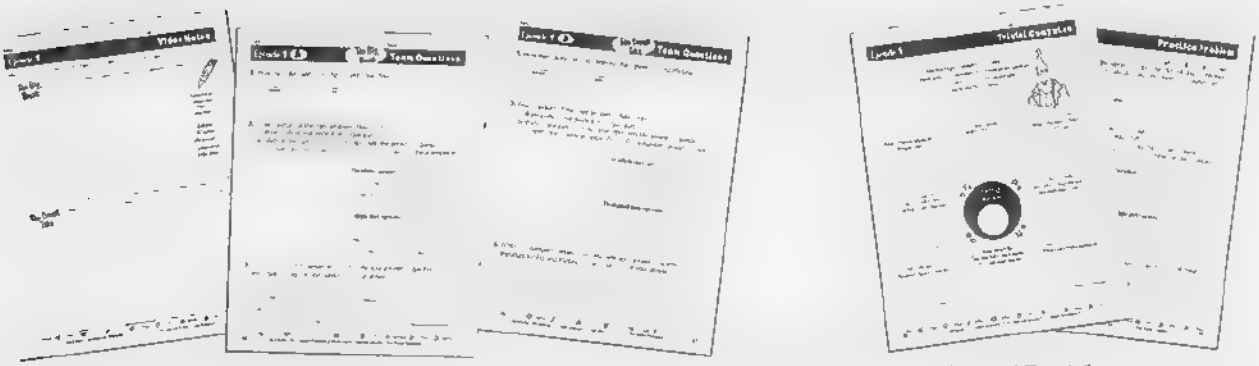
Reproducible worksheet masters can be found on pages 41–68.

For the Intro Activity, *each* student needs:

Video Notes for Intro Activity

Team Questions for Intro Activity

For *each* of the four episodes, *each* student needs:



Video Notes for Problem A & B | *Team Questions for Problem A* | *Team Questions for Problem B* | ***Optional:** Trivial Computes and Practice Problem*

Because each episode requires multiple worksheets, we recommend clipping the worksheets together to form a packet for each student. (You can copy them double-sided to form a small book.)

Note: DO NOT copy the Video Notes and Team Questions back-to-back; students need to use these worksheets side by side.

4. Set up the classroom

Arrange your classroom to facilitate cooperative learning and discussion. Some things to consider include: students' ability to communicate without disrupting other groups, ease of eye contact among team members, adequate work space, and ability to see and hear the computer.

5. Divide your class into teams of four (or so)

We've found it works best to assign students in teams deliberately and in advance of the class period. Ideally, teams should have diversity and a good balance of skills and personalities.

6. Assign team colors

Assign each team one of the following colors: red, yellow, blue, green, orange, purple, silver, or brown. The program uses these team colors to choose teams randomly during the Team Quiz.

Starting the CD-ROM

1. Insert the CD-ROM

Insert the *Fizz & Martina's Math Adventures* CD-ROM into the CD-ROM drive of your computer. (Installation is not required for Macintosh. For Windows, follow the installation directions printed on the CD.)

Note: Before you begin, make sure to check the ReadMe file on the CD-ROM for the latest technical tips. If you encounter problems, refer to Technical Troubleshooting on pages 25 26.

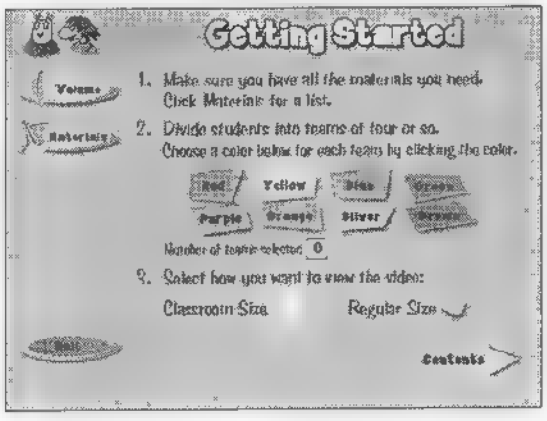
Double-click the *Lights, Camera, Fractions!* icon. The title screen will appear.

2. Watch the overview

Click **Overview** from the title screen to see a helpful overview of *Fizz & Martina's Math Adventures*. Then just point and click to navigate. You'll see two short slide shows describing the Fizz & Martina process and showing how it works in a classroom.

The slide shows play full screen. To pause them at any point, just click the mouse. The image will switch to regular size, and you can use the controller bar to replay specific parts of the slide show. Click **Watch Classroom Size** to resume full-screen playback. Click **Overview Menu,** then click **Done** to return to the title screen.

3. Organize your class



To begin, click the forward arrow from the title screen. A Getting Started screen follows with reminders about how to organize your class and what materials to gather.

You can click **Materials** to view a list of the worksheets and other materials you'll need for each episode.

Before continuing:

- Click the color corresponding to each team in your class. (The total number of student teams will appear in the box below.)
- Indicate how you want to view the movies on the CD-ROM. If you're previewing *Fizz & Martina's Math Adventures* on your own, click **Regular Size.** If you're showing the program to a group, click **Classroom Size.** Classroom Size will expand the movie image to fill the screen. It's just like watching television.
- When you're ready, click the forward arrow.

4. Choose an episode

The table of contents allows you to select where you want to continue in the story.

Lights, Camera, Fractions! begins with an introductory video and activity designed to help familiarize students with the Fizz & Martina process. The main story is divided into four episodes, each made up of two story problems (Problem A and Problem B), plus a variety of follow-up activities. The four episodes should be completed in sequence.

Click the **Intro Activity** button now.

The Intro Activity

Overview: Students watch an introductory video segment in which Fizz, Martina, and their math teacher, Mr. Barney, explain and model the program's unique problem-solving process. During breaks in the video, students work in teams and practice this process themselves as they complete the Team Questions worksheet.

Note: This intro guides students through the three Team Questions one at a time; however, in later episodes, students will complete all three Team Questions at one sitting.

1. Follow the steps on-screen to get the class ready. Remind students that they will be solving a problem along with Fizz and Martina, and will need to pay close attention. Click the forward arrow to watch the video.

   In the video, Mr. Barney tells his class a story about the Starship Fearless. As students listen to this story, they must record three important facts on the Video Notes worksheet.

2. When the video segment ends, students break into teams. Together, teammates must solve the problem presented in the story and complete the *first* question on the Team Questions worksheet.

3. When students are ready to share their answers, click the forward arrow to begin the Team Quiz. Then:

   - Click the **Team Picker** button to choose a team.
   - Select a student on the team to share his or her answers.
   - If the answer is correct, click **Award** and give each student on the team an award card.
   - When you are done, click the forward arrow and return to the video.

4. When the video resumes, Mr. Barney reviews the first question with his own class, then asks students to continue with the second question. This question asks students to illustrate the math problem they just solved by drawing and labeling a "whole" and its "parts." Students must label the whole and parts *without* using any numbers. Because this process can be challenging the first time through, Mr. Barney gives students an example.

5. When the video comes to a stop, students again break into teams to answer the second question on the Team Questions worksheet. When students are ready to share their answers, repeat step 3 (above). Encourage students to explain the thinking behind their drawings.

6. When the video resumes, Mr. Barney reviews the second question, then asks students to complete the third and final Team Question. As before, students answer the question in teams, then share their answers during the Team Quiz (see step 3 above).

7. After finishing the third question, click the forward arrow to watch the concluding video segment. You will then return to the table of contents.

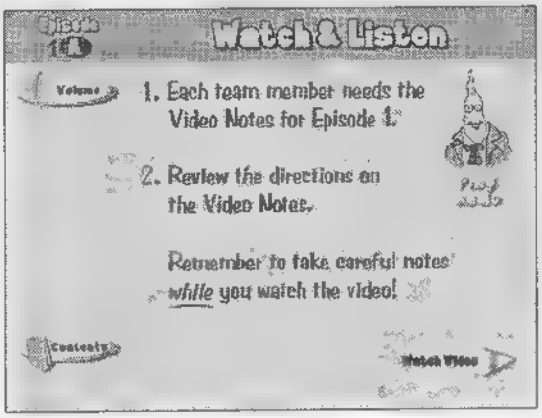
The Episodes

Each of the four episodes is made up of two story problems. As students progress through these problems, they follow a simple three-step process which requires them to watch the video and gather relevant data, discuss and solve the problems with their teammates, and share their written and spoken answers.

To begin, click **Episode 1** from the table of contents. Then click **1A: The Big Break** to begin with the first story problem.

Watch & Listen

Overview: Students, arranged in teams, watch and listen to the video story, recording important information on their Video Notes worksheets. Eventually, the characters in the story encounter a math problem.



1. Prepare for this problem

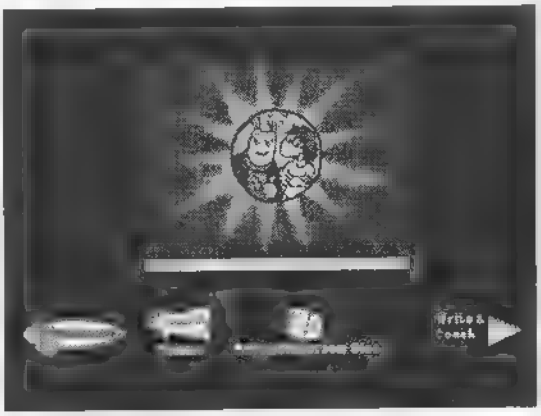
Follow the on-screen directions to get the class ready. (Click **Play Audio** to hear Mr. Barney read these directions.)

Click the forward arrow to continue.

2. Watch the video

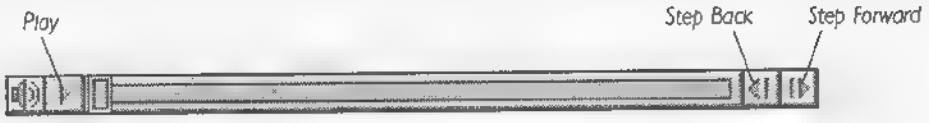
If you are watching full-screen video:

The video will automatically stop when it's time for students to solve the problem presented in the story. To stop the video before it's over, just click the mouse button. The video will pause and switch to regular size. Click **Watch Classroom Size** to resume full-screen playback.



If you are watching regular-size video:

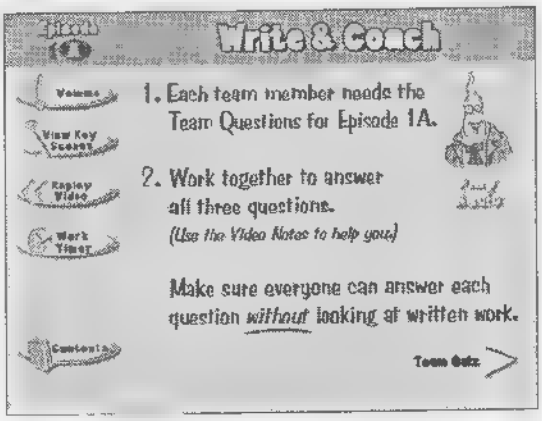
Use the controller bar to review and replay specific parts of the video. Use the volume slider to adjust the volume. When the video ends, click the forward arrow to continue.



Write & Coach

Overview: Students work in teams to solve the problem presented in the story. After completing the three Team Questions, they must make sure that each member can explain the team's answers *without* looking at written work.

1. Prepare students to answer the Team Questions



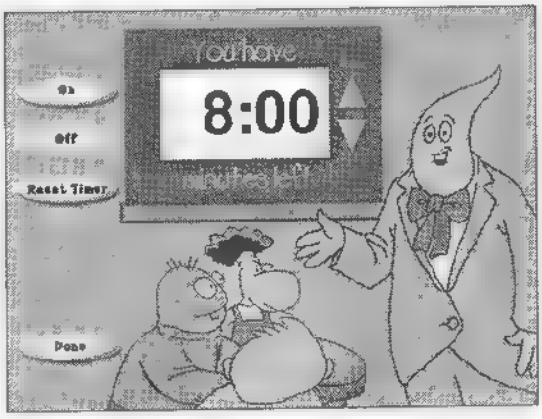
The Write & Coach screen directs students to work together to complete the three Team Questions:

- Question 1 states the problem and calls for a numerical answer (including both a number and its corresponding unit).
- Question 2 asks students to draw a picture of the math problem. They must label the "whole" and its "parts" *without* using any numbers.
- Question 3 asks students to predict the consequences of their answer for certain characters in the video, bringing the problem back into the context of the video story.

TEACHER TIP: Remind students that talking is allowed!

At first, you may need to remind students that it is OK (it's actually required!) to talk and share ideas with their team members. In fact, the more information they share, the better their chances for success.

2. Set a time limit



It is helpful to set limits on the amount of time teams have to complete the Team Questions. The Work Timer feature can help you and your students keep track of how much time they have left.

- Click **Work Timer.**
- By default, the timer is set for 8 minutes. This is usually enough, but younger students (or students new to cooperative work) may need more time. To increase or decrease the amount of time, click the up or down arrows.
- To begin timing, click **On.** The screen will show how many minutes are left to work. (To pause the timer, click **Off.** To reset the timer to its starting time, click **Reset Timer.**)

TEACHER TIP: Be tough about time.

At first, some groups may have trouble finishing their work in the allotted time. Sometimes, you may wish to extend students' work time, but in general, enforcing the time limit ultimately leads to more effective teamwork.

The Team Quiz

Overview: The teacher randomly selects a team, then chooses a student to answer the first Team Question. If the student's written and spoken answers are correct (based, of course, on the teacher's judgement), every member of the team wins an award card! The same process is repeated for questions 2 and 3.

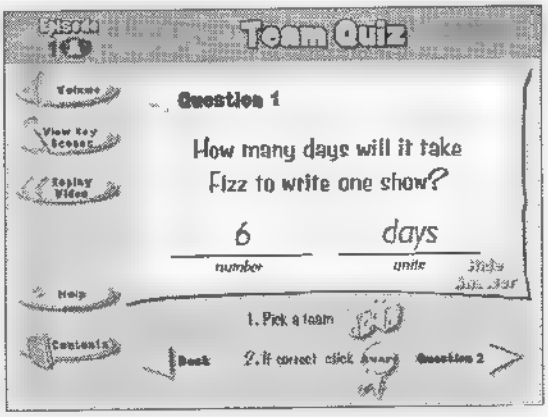
1. Have all students turn their worksheets face down

2. Read the first question

Read the question on the Team Quiz screen to the class (or click to hear Mr. Barney read the question).

3. Pick a team

Click the **Team Picker** button and Mr. Barney will randomly select a team. This fun, democratic technique keeps the entire class on its toes.



4. Choose a student

Once a team is selected, it's up to you to choose which student on the team should answer the question.

TEACHER TIP: Choose students strategically.

Sometimes, you'll want to pick a student who has the correct answer in order to build self-esteem and confidence. But other times, try picking a student who you know is going to give the wrong answer, then place responsibility on the entire team. It's a great way to encourage future involvement and better teamwork. Stronger math students see why they need to be involved; weaker math students discover they can look to teammates for support.

5. Have the student answer the question

Ask the selected student to hand you the Team Questions worksheet. Then ask the student to answer the question. (It is important to have students answer without looking at their written work — to test that both preparation and understanding are good.)

6. Evaluate the answer

Once the student has shared his or her answer, it is up to you to determine whether the spoken answer is correct and complete. (Look at the student's Team Questions worksheet to evaluate the written answer as well.) Sample answers are included in the Content Guide & Answer Key, pages 27–35. You can also view sample answers on-screen. Just click **See Answer.**

Note: We've included one sample answer for each question, but there may be a number of other acceptable answers — especially for questions 2 and 3.

TEACHER TIP: Set high but achievable standards.

When evaluating student answers, it pays to be tough. Demand clear, concise answers that use correct grammar. If you don't get them, put the responsibility on the group, not the individual. Students quickly learn what is expected of them.

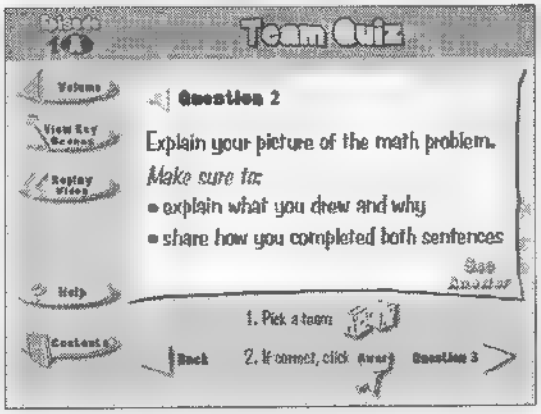
7. Reward the team for good answers

If the student's written and spoken answers are correct, click **Award** and give an award card to *every member* of the team. (It's important to emphasize that *all team members* contributed to this success.) If the student's answers are incorrect, you may review the question with the class, choose another team to answer the same question, or continue with the next question.

8. Continue with questions 2 and 3

Repeat the previous steps for the two remaining questions. Below are some teaching tips for these questions:

- Since Team Questions 2 and 3 are more open-ended than the first question, students' answers may vary. You can encourage discussion by inviting multiple teams to share their solutions.
- For tips on assessing students' oral explanations, see pages 36–39.
- When quizzing students on Team Question 2, invite students to draw their pictures on the blackboard (so that others can see). Make sure they explain both *what* they drew and *why*.



TEACHER TIP: Wrong answers are an opportunity for learning.

After each episode, you can have students evaluate the answers on their worksheets, and explain any incorrect answers. Then check students' self-evaluations, giving award cards to students and teams who correctly marked their work, even if the original answers were wrong.

9. Continue with the second half of the episode (problem B)

When students have answered all three questions, click the forward arrow and continue with the second half of the episode. Whether you continue now, or come back later (use the table of contents to pick up where you left off), the second part of the episode follows the same three steps: Watch & Listen, Write & Coach, and Team Quiz. When you have completed both story problems in the episode, click the forward arrow to watch a short concluding video. When the video ends, you will have a choice of several follow up activities. (See pages 20–23 for a guide to these activities.) Click an activity, or click **Contents** if you wish to continue with the next episode or quit the program.

Additional Features

Continuing with the Story

Use the table of contents to select the spot where you last left off. First, click one of the four episode buttons (or the **Intro Activity** button). Then click the desired segment. (See the Content Guide & Answer Key on pages 27–35 for a summary of the storyline and content of each segment.)

Quitting

A **Quit** button appears on the Contents screen. Go there to quit, or quit the program from the keyboard by typing Command-Q on the Macintosh or Ctrl-Q on Windows.

Controlling the Volume

Click and hold down the mouse on the **Volume** button You can then slide the volume control to the desired level. (On the video screen, the volume control appears at the bottom of the screen.)

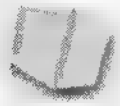
Getting Help Along the Way

Click the question mark for audio help on the Team Quiz screens.

Reviewing Previously Seen Segments of the Story

Click **Replay Video** to review the entire video segment for a particular math problem. (To review the video for both math problems and the conclusion, click **Replay Video** from the Follow-Up Menu.)

Click **View Key Scenes** to review only those scenes which contain information necessary to solve the problem.



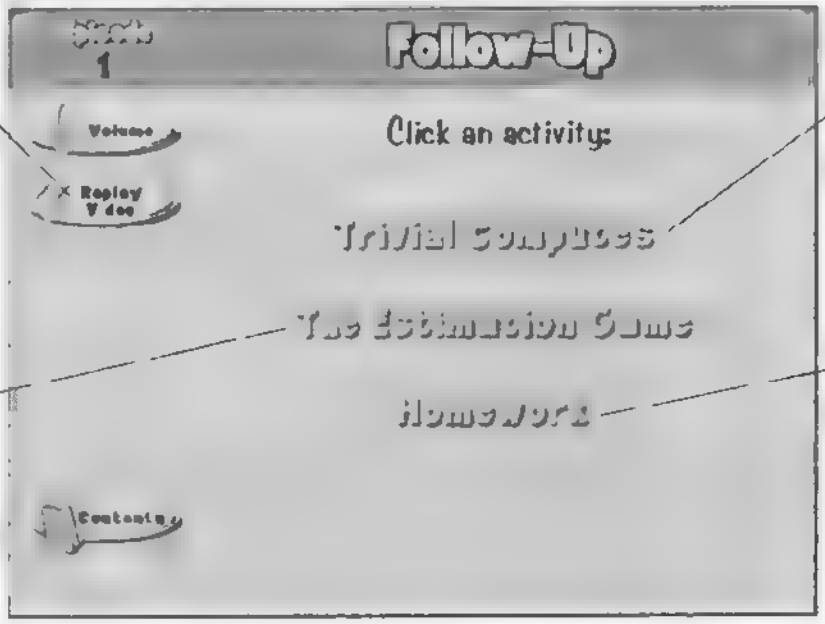
Changing the Size of the Video Display

If you are viewing the video full screen, just click the mouse button and the video will shrink to regular size. Click **Watch Classroom Size** to increase the size of the video display back to full screen.

Optional Follow Up Activities

The *Fizz & Martina's Math Adventures* CD-ROM offers several follow-up activities after each episode. These activities allow students to practice, apply, and expand on skills emphasized in the main activity (including computation, mathematical communication, and problem solving)

After completing both story problems in an episode, and watching the conclusion video, you will see a menu of follow-up activities. (This menu can also be reached from the table of contents by choosing the desired episode, then clicking **Follow-Up.**)



Click this button to review all three video segments — problem A, problem B, and the conclusion — for the given episode.

This in-class activity emphasizes recall and computation skills.

This in-class activity teaches computational estimation strategies.

Click here for a list of take-home worksheets offering more problem-solving practice.

Trivial Computes

Overview

This in-class activity combines a game of remembering facts and numbers from the story with additional computation practice. Students work in teams to answer eight questions If completed correctly, the numerical answers will add up to a special Magic Number.

Class Time Involved

5 to 15 minutes. (This activity is best done *immediately after* completing an episode — while the details of the story are still fresh in students' minds. *Optional:* Have teams work on the Trivial Computes worksheet as a "bonus" if they finish early with the Team Questions. Then review the answers at the end of the class period.)

Materials

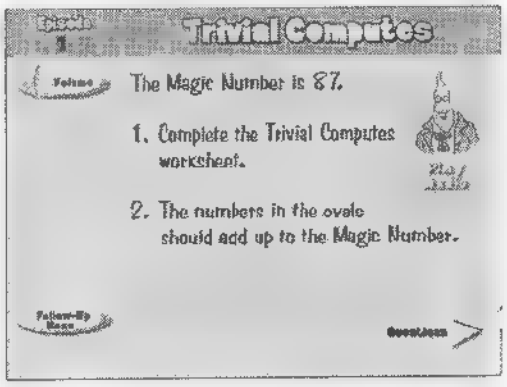
- *Fizz & Martina's Math Adventures* CD-ROM
- Trivial Computes worksheet
- Award cards (optional)

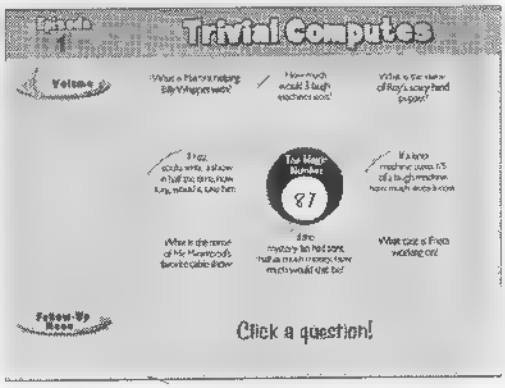
How It Works

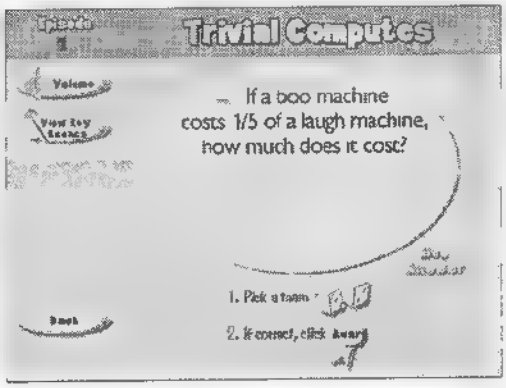
1. Have students work in teams, and make sure each student has a copy of the Trivial Computes worksheet. (***Note:*** Depending on your class, you may want to have your students review the questions on this worksheet prior to viewing the video episode.)
2. From the Follow-Up menu, click **Trivial Computes.** Have students write down the Magic Number and complete the eight questions on the Trivial Computes worksheet. When you are ready to review the answers with your class, click the forward arrow.
3. Click one of the ovals or rectangles to see an enlarged view of that question.
4. Read the question (or click to hear it read). Then call on a student to share his or her answer. To check the answer, click **See Answer.** To review the video segment where the answer was given, click **View Key Scenes.**

Note: Award cards are optional here. You may choose to give them to teams, to individual students, or not at all.

5. When you are ready to continue with the next question, click **Back.**







The Estimation Game

Overview

This simple, fast-paced game encourages students to explore a variety of computational estimation strategies. Students solve three timed estimation problems, then share their strategies with classmates. They also have an opportunity to view examples of successful estimation strategies.

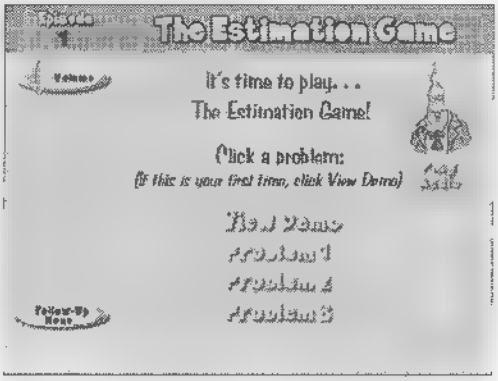
Class Time Involved

15 minutes. (This activity is best done during a separate class period from the main activity.)

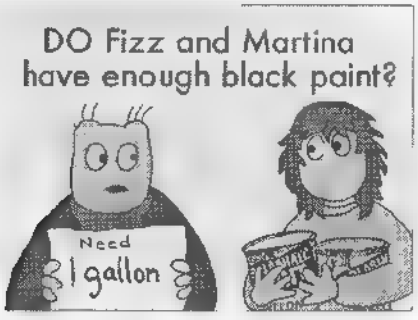
Materials

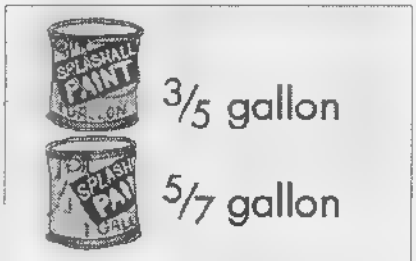
- *Fizz & Martina's Math Adventures* CD-ROM
- Award cards (optional)

How It Works

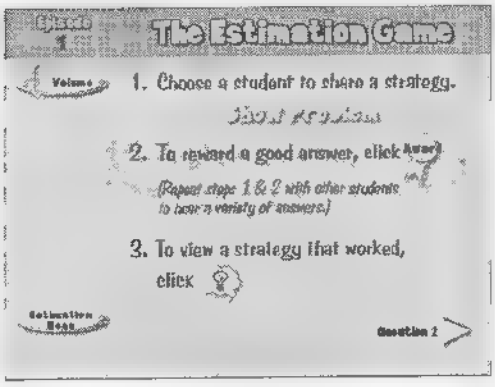


1. Make sure all students can see the computer or TV monitor.
2. From the Follow-Up menu, click **The Estimation Game.**
3. If your class is doing this activity for the first time, click the **View Demo** button. In the brief animation that follows, Mr. Barney (Fizz & Martina's math teacher) offers some guidelines on estimating and demonstrates how this activity works.
4. Click **Problem 1** to begin the first problem. Mr. Barney presents a problem, then gives students a limited time (14 seconds) to do a mental estimate. Students who have estimated correctly are asked to stand up. (To pause before the problem is over, just click the mouse button.)





5. The next screen invites you to call on individual students to share their estimation strategies. Ask for volunteers, or simply choose from among those standing! Alternatively, have students first share their strategies with their teammates. Then call on individual students to share one of the strategies discussed by the team.



   - Choose a student, then click **Show Problem** to display the original problem on-screen. (Most students will need this visual display as a reference.)
   - To reward a good answer, click **Award** and offer the student an award card (optional). If students are working in teams, give an award card to *each* team member.

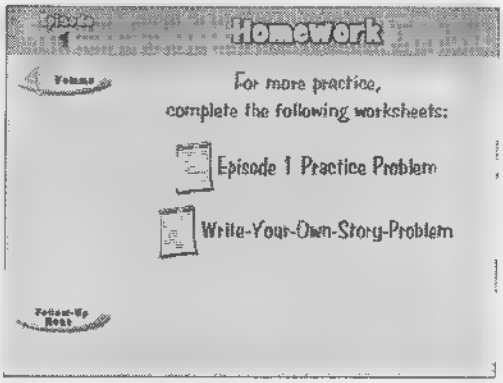
6. After one student has shared, solicit answers from others who may have used different strategies. It is important to emphasize that there is no one correct way to solve these problems. One way to make this point is to keep a running written list of the various strategies used. Challenge students to come up with new strategies to add to the list.

7. When students have finished sharing their own strategies, click the button to see an example of a strategy that worked.

8. Click the forward arrow to continue with the next problem.

(Click **Estimation Menu** to return to The Estimation Game's main menu. From there, you can choose a different problem, or click **Follow-Up Menu** to leave The Estimation Game.)

Homework



Overview

Clicking **Homework** displays a list of optional homework activities. The Practice Problem worksheets give students further practice solving problems and describing their strategies in words and pictures. The Write-Your-Own-Story-Problem worksheet requires students to apply these skills by creating their own story problems.

Class Time Involved

None. (Students complete these worksheets at home.)

Materials

- Practice Problem worksheet
- Write-Your-Own-Story-Problem worksheet

Technical Troubleshooting

To correct any problems running *Fizz & Martina's Math Adventures* on your computer, start by following the recommendations on this troubleshooting checklist. For the latest technical updates, check the ReadMe file on the CD-ROM.

Macintosh Users

Install the latest version of QuickTime™

Double-click the QuickTime installer on the CD-ROM. The installation will check to see if you have the most recent versions of QuickTime, QuickTime PowerPlug, and Sound Manager in your system. If you do not, it will install them from the CD-ROM.

Turn off Virtual Memory; reset Memory Cache

Virtual Memory can interfere with the performance of multimedia programs. You can turn off Virtual Memory using your Macintosh's Memory control pane.. In that control panel, you'll also find a setting for Disk Cache. Set your cache so that you have at least 32k for every megabyte of real RAM (as opposed to RAM Doubler). For example, if you have 16 megs of RAM, set the cache for at least 512.

Reset Monitors and Sound

Use the Monitors and Sound control panels to switch between 256 colors and thousands of colors (recommended, if your machine supports it) and to turn up the audio level to maximum.

Note: On some machines, increasing the number of colors in the display may cause performance problems.

Turn off other applications and extensions

To make sure you have sufficient memory to run *Fizz & Martina's Math Adventures* successfully, quit or exit other open applications on your computer. Also, open the Extensions Manager control panel and turn off all extensions except for CD-ROM, QuickTime extensions, and Sound Manager. You may want to save this minimum set for use with other multimedia titles. Restart your computer.

Windows Users

Install the latest version of QuickTime™

Use the *Fizz & Martina's Math Adventures* CD-ROM to install QuickTime. The installation will make sure you have the most recent version of QuickTime on your computer.

Check Display settings

The movies in *Fizz & Martina's Math Adventures* typically look better when displayed in more colors. Check the Display options on your machine and make sure to select at least 256 colors. Thousands of colors (also called 16-bit or High Color) will look even better.

Note: On some machines, increasing the number of colors in the display may cause performance problems.

Delay or disable your screensaver

If your screensaver is set to kick in before 5 minutes pass, it might interrupt the program. Reset the timer for at least 10 minutes or turn it off altogether.

Call Tech Support

For additional help, contact our Technical Support Team at *1-800-342-0236.*

When you call, please have the following information available:

- Software title and version number. These can be found on the CD-ROM.
- Your computer platform (Windows 3.1, Windows 95, Macintosh, or Power Macintosh)
- Your computer model (*e.g.,* Macintosh Performa 575, Compaq Prolinea)
- Your computer's memory (*e.g.,* 16 megabytes of RAM)
- Your computer's processor and speed (*e.g.,* 486 processor running at 66 MHz)

If possible, have the software running on a computer close to the telephone when you call.

Our Technical Support team is available Monday through Friday, 8 a.m. to 5 p.m. EST.

You can also e-mail us at **Tech@TeachTSP.com**

Content Guide & Answer Key

Intro Activity

Summary

In the introductory video segment, Fizz, Martina, and their math teacher, Mr. Barney, explain and model the program's unique problem-solving process. During three breaks in the video, students work in teams and practice this process themselves as they complete the Team Questions worksheet. ***Note:*** This intro guides students through the three Team Questions one at a time; however, in later episodes, students will complete all three Team Questions at one sitting.

Video Length

- 10:03 minutes (Part 1: 4:07 minutes; Part 2: 3:20 minutes; Part 3: 1:11 minutes; Conclusion: 1:25 minutes)

Content

- Part 1: Note taking; fraction concepts; division
- Part 2: Describing fractional relationships in pictures and words
- Part 3: Comparison of quantities

Worksheets

- Video Notes (page 42)
- Team Questions (page 43)

Teaching Suggestions

We recommend using this CD-ROM as a supplement to an introductory unit on fractions. The problems in each episode can be used as a jumping-off point for exploring particular fraction concepts. Prior to using *Lights, Camera, Fractions!* with your class, make sure students are familiar with multiplication and division, and have had some introduction to basic fraction concepts (i.e., wholes and parts, naming and writing fractions).

Name _____ Team _____

Intro Activity — The Big Freeze — **Video Notes**

While you watch the video, record important numbers and information in the blanks below.

Example Fizz moved to Blue Falls 4 (number) years (units) ago.

The Starship Fearless started out with a fuel level of 20 (number) heat crystals.

If the Starship's fuel level falls below 12 heat crystals, the ship will freeze.

The Starship Fearless lost half its heat crystals when it was hit by a comet.

Name _____ Team _____

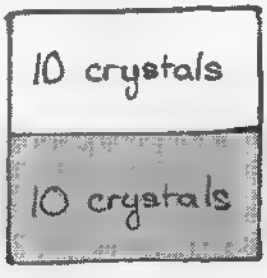
Intro Activity — The Big Freeze — **Team Questions**

1. How many heat crystals are left on the Starship after it is hit by a comet?

10 (number) heat crystals (units)

20 ÷ 2 = 10

2. Draw a picture of this math problem. Make sure to:
(a) draw a whole and divide it into equal parts
(b) shade in the part (or parts) that represents the answer to question 1
(c) complete the sentences below. Do NOT use numbers in these sentences.



The whole represents: the number of heat crystals the Starship started with.

The shaded area represents: the number of crystals left after the Starship was hit.

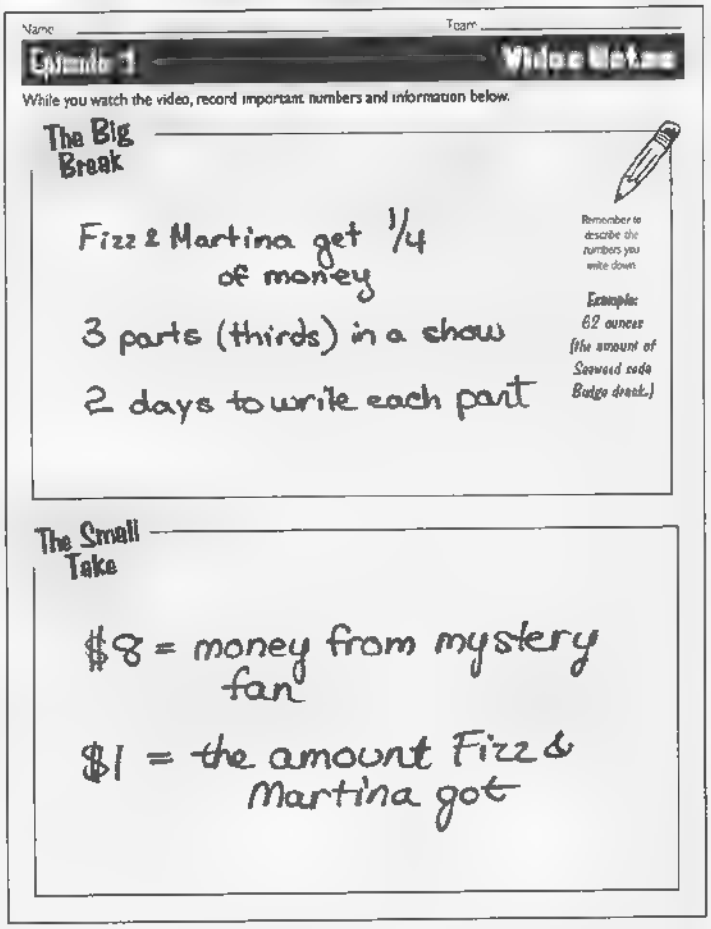
3. Write, in a complete sentence (or two), why your answer to question 1 is important for the crew of Starship Fearless. Use the number 12 in your answer.

The Starship's fuel level has fallen below 12 heat crystals, so the ship will freeze!

Episode 1: The Big Break & The Small Take

Summary

A scheming TV producer, Mr. Minimood, hires Fizz and Martina to write and star in their own detective show. Minimood hopes the show will be a flop, so that it won't compete with his own show, The Minimood Express. He is in for a surprise when The Roy & Frieta Show becomes an instant hit!


Name _____ Team _____

Episode 1 — Video Notes

While you watch the video, record important numbers and information below.

The Big Break

Fizz & Martina get 1/4 of money

3 parts (thirds) in a show

2 days to write each part

Remember to describe the numbers you write down

Example: 62 ounces (the amount of Seaweed soda Budge drank.)

The Small Take

$8 = money from mystery fan

$1 = the amount Fizz & Martina got

Video Length

- 8.13 minutes (Problem A: 4:56 minutes; Problem B: 2:39 minutes; Conclusion: 0:38 minutes)

Content

- Fraction concepts
- Computing fractional parts of whole numbers
- Multiplication and division with one-digit numbers

Worksheets

- Video Notes (page 45)
- Team Questions for Problem A (page 46)
- Team Questions for Problem B (page 47)

Follow-Up Activities

- Trivial Computes worksheet (page 48)
- The Estimation Game (no worksheets necessary)

Homework

- Practice Problem worksheet (page 49)
- Write-Your-Own-Story-Problem worksheet (page 68)

Teaching Suggestions

The problems in this episode can be used to reinforce basic fraction concepts. Below are some ideas to explore during (or following) Episode 1:

- **pictoral representations of fractions:** Discuss the similarities and differences in students' drawings (Team Question 2). For example, students may have represented their whole as a circle, square, or set of objects; however, *all* should have divided the whole into parts of equal size.
- **naming and writing fractions:** What are the numerator and denominator? What does each show? How does each number relate to students' drawings?
- **connections to multiplication and division:** Encourage students to brainstorm number sentences that could describe each math problem. For example, the relationship in the first problem could be described by: 3 times 2 equals 6, 6 divided by 2 equals 3, or 1/3 of 6 equals 2.

Note: The answer key on the opposite page shows completed worksheets. The solutions shown represent just one way to answer the questions. Different solutions may be just as appropriate.

Name _____ Team _____

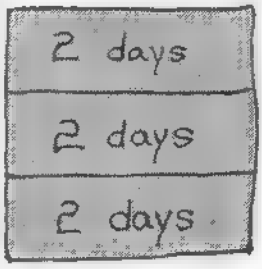
Episode 1 A — The Big Break — Team Questions

1. How many days will it take Fizz to write one show?

6 (number) days (units)

3 × 2 = 6

2. Draw a picture of this math problem. Make sure to:
   (a) draw a whole and divide it into equal parts
   (b) shade in the part (or parts) that represents the answer to question 1
   (c) complete the sentences below. Do NOT use numbers in these sentences.



The whole represents: the number of days Fizz needs to write a whole show.

A single part represents: the number of days he needs to write a part of a show.

3. Write, in a complete sentence (or two), why your answer to question 1 is important for Fizz. Use the number 7 in your answer.

There are 7 days in a week, and Fizz only needs 6 days to write a show, so he can write a show each week.

Name _____ Team _____

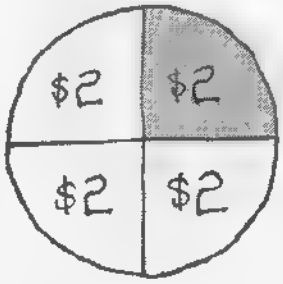
Episode 1 B — The Small Take — Team Questions

1. How many dollars should Minimood have given Fizz and Martina?

2 (number) dollars (units)

8 ÷ 4 = 2

2. Draw a picture of this math problem. Make sure to:
   (a) draw a whole and divide it into equal parts
   (b) shade in the part (or parts) that represents the answer to question 1
   (c) complete the sentences below. Do NOT use numbers in these sentences.



The whole represents: the number of dollars sent by the mystery fan.

The shaded area represents: the number of dollars Fizz and Martina should get.

3. Write, in a complete sentence (or two), why your answer to question 1 is important for Fizz and Martina. Use the number 1 in your answer.

Minimood is cheating Fizz and Martina, because he only gave them $1, but he owed them $2.

Name _____ Team _____

Episode 1 — Trivial Computes

Write the Magic Number in the center circle below. Work with your teammates to answer all the questions. The numbers in the ovals should add up to the Magic Number.

What is Martina helping Billy Whippet with?
his spelling

How much would 3 laugh machines cost?
$75

What is the name of Roy's scary hand puppet?
Daisy

If Fizz could write a show in half the time, how long would it take him?
3 days

The Magic Number
87

If a boo machine costs 1/5 of a laugh machine, how much does it cost?
$5

What is the name of Mr. Minimood's favorite cable show?
The Minimood Express

If the mystery fan had sent half as much money, how much would that be?
$4

What case is Frieta working on?
the Skivvy case

Name _____ Team _____

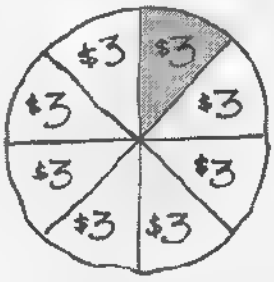
Episode 1 — Practice Problem

In the grocery store, Fizz saw a big wheel of cheese that cost $24. "I don't need that much cheese for my Waffle Supreme recipe!" Fizz fumed, "plus I only have $5." The grocer told him she was about to slice the cheese into eighths, and he could buy one of those slices.

1. How much would each slice of cheese cost?

3 (number) dollars (units)

2. Draw a picture of this math problem. Make sure to:
   (a) draw a whole and divide it into equal parts
   (b) shade in the part (or parts) that represents the answer to question 1
   (c) complete the sentences below. Do NOT use numbers in these sentences.



The whole represents: the cost of a whole wheel of cheese.

A single part represents: the cost of a single slice of cheese.

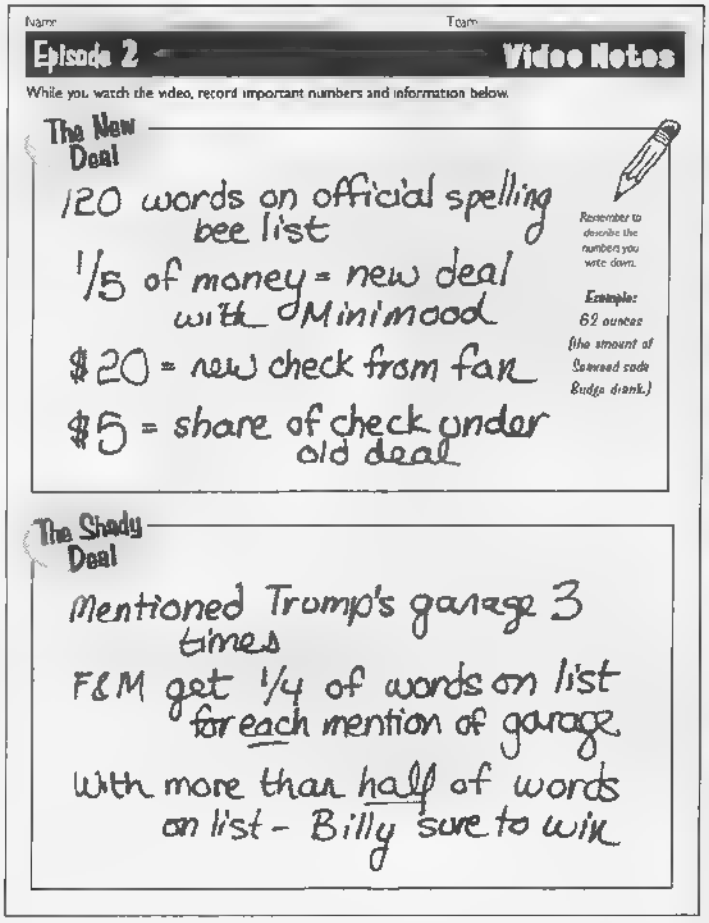
3. Write, in a complete sentence, what your answer to question 1 will mean for Fizz. Use the number 5 in your answer.

Fizz will have enough money to buy a slice, because each slice costs less than $5.

Episode 2: The New Deal & The Shady Deal

Summary

Fizz and Martina make a deal with garage owner Trump, in an effort to help their friend Billy compete at the Blue Falls Spelling Bee. When they realize their plan would give Billy an *unfair* advantage, Fizz and Martina change their minds about the deal, but it is already too late to stop Trump!


Name Team

Episode 2 — Video Notes

While you watch the video, record important numbers and information below.

The New Deal

120 words on official spelling bee list

1/5 of money = new deal with Minimood

$20 = new check from fan

$5 = share of check under old deal

Remember to describe the numbers you write down.

Example: 62 ounces (the amount of Seaweed soda Rudga drank.)

The Shady Deal

Mentioned Trump's garage 3 times

F&M get 1/4 of words on list for each mention of garage

With more than half of words on list - Billy sure to win

Video Length

- 7:37 minutes (Problem A: 3:58 minutes; Problem B: 2:11 minutes; Conclusion: 1:28 minutes)

Content

- Fraction concepts
- Comparing unit fractions
- Computing fractional parts of whole numbers
- Multiplication and division with one-, two-, and three-digit numbers

Worksheets

- Video Notes (page 51)
- Team Questions for Problem A (page 52)
- Team Questions for Problem B (page 53)

Follow-Up Activities

- Trivial Computes worksheet (page 54)
- The Estimation Game (no worksheets necessary)

Homework

- Practice Problem worksheet (page 55)
- Write-Your-Own-Story-Problem worksheet (page 68)

Teaching Suggestions

The problems in this episode can be used to reinforce fraction comparison and equivalency. Below are some ideas to explore during (or following) Episode 2.

- **comparing unit fractions:** Can students explain why 1/4 is greater than 1/5? Encourage them to do so through both pictures and reasoning (i.e., "if the same whole is divided into 5 pieces, rather than 4, each piece will be smaller").
- **equivalent fractions:** In Problem A, students learn that 1/4 is equivalent to $5 out of $20 (or 5/20) and that 1/5 is equivalent to $4 out of $20 (or 4/20). Using this same principle, can students find equivalents for 1/10? 1/2? How can the concept of equivalence help show that one fraction is greater than another?

Note: The answer key on the opposite page shows completed worksheets. The solutions shown represent just one way to answer the questions. Different solutions may be just as appropriate.

Name _____ Team _____

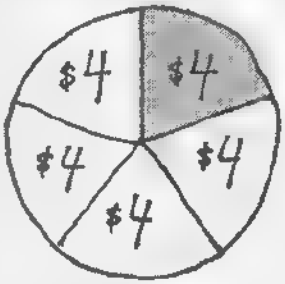
Episode 2 A — The New Deal — Team Questions

1. How many dollars will Fizz and Martina get from this latest mystery check?

4 (number) dollars (units)

$20 \div 5 = 4$

2. Draw a picture of this math problem. Make sure to:
   (a) draw a whole and divide it into equal parts
   (b) shade in the part (or parts) that represents the answer to question 1
   (c) complete the sentences below. Do NOT use numbers in these sentences.



The whole represents: the number of dollars in the latest mystery check.

The shaded area represents: the number of dollars Fizz and Martina will get.

3. Write, in a complete sentence (or two), why your answer to question 1 is important for Fizz and Martina. Use the number 5 in your answer.

Fizz and Martina were better off with the old deal. Before, they would have gotten $5, but now they are only getting $4.

Name _____ Team _____

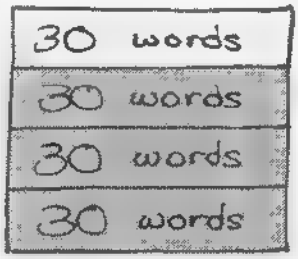
Episode 2 B — The Shady Deal — Team Questions

1. How many words does Trump owe Fizz and Martina?

90 (number) words (units)

$120 \div 4 = 30 \quad 30 \times 3 = 90$

2. Draw a picture of this math problem. Make sure to:
   (a) draw a whole and divide it into equal parts
   (b) shade in the part (or parts) that represents the answer to question 1
   (c) complete the sentences below. Do NOT use numbers in these sentences.



The whole represents: the number of words on the official spelling list.

A single part represents: the number of words Fizz and Martina get for each mention of Trump's garage.

3. Write, in a complete sentence (or two), why your answer to question 1 is important for Billy. Use the number 60 in your answer.

Billy will get 90 words. That's over 60 words (more than half the words on the list) so Billy will be almost sure to win.

Name _____ Team _____

Episode 2 — Trivial Competition

Write the Magic Number in the center circle below. Work with your teammates to answer all the questions. The numbers in the ovals should add up to the Magic Number

What is the name of Minimood's assistant?
The Perrymeister

How many ounces of Diet Fresno are in 1/3 of a portion?
2 ounces

Where must Fizz and Martina meet Trump after their show?
Long Pier

If Fizz were only half as mad, he'd be madder than (at most) how many wet roosters?
6 wet roosters

The Magic Number
21

How many times must Fizz and Martina mention Trump's garage to get all the words on the list?
4 times

What subject does Frieta teach?
Math as a Second Language

If the mystery fan sent $45, how much would Fizz and Martina get, according to their new deal?
$9

Which word did Billy misspell on his nose?
spelling

Name _____ Team _____

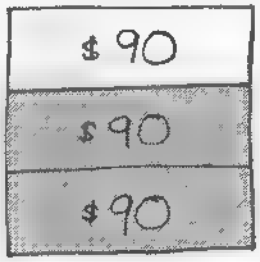
Episode 2 — Practice Problem

Lydia Lo, owner of the Blue Falls Theater, asked Fizz and Martina to perform The Roy & Frieta Show live. She promised to give them 2/3 of any money that came in. When the show was over, Lydia had sold $270 worth of tickets. She gave Fizz and Martina $150. Are they getting their fair share?

1. How much money should Fizz and Martina be getting?

180 (number) dollars (units)

2. Draw a picture of this math problem. Make sure to:
   (a) draw a whole and divide it into equal parts
   (b) shade in the part (or parts) that represents the answer to question 1
   (c) complete the sentences below. Do NOT use numbers in these sentences.



The whole represents: the total number of dollars that came in.

The shaded area represents: the number of dollars Fizz and Martina should get.

3. Write, in a complete sentence, what your answer to question 1 will mean for Fizz and Martina. Use the number 150 in your answer.

Fizz and Martina were given only $150, so they are not getting their fair share of the money.

Episode 3: The Writer & The Rehearsal

Summary

Minimood, outraged at The Roy & Frieta Show's popularity, hires pretentious professor Tweetwig as the new writer and director of the show. Meanwhile, Fizz and Martina trick Trump into reporting the stolen spelling word list so that Billy can compete in the spelling bee with a clear conscience.

Video Length

- 8:43 minutes (Problem A: 3:22 minutes; Problem B: 4:31 minutes; Conclusion. 0:50 minutes)

Content

- Simple addition and subtraction with fractions
- Computing fractional parts of whole numbers

Worksheets

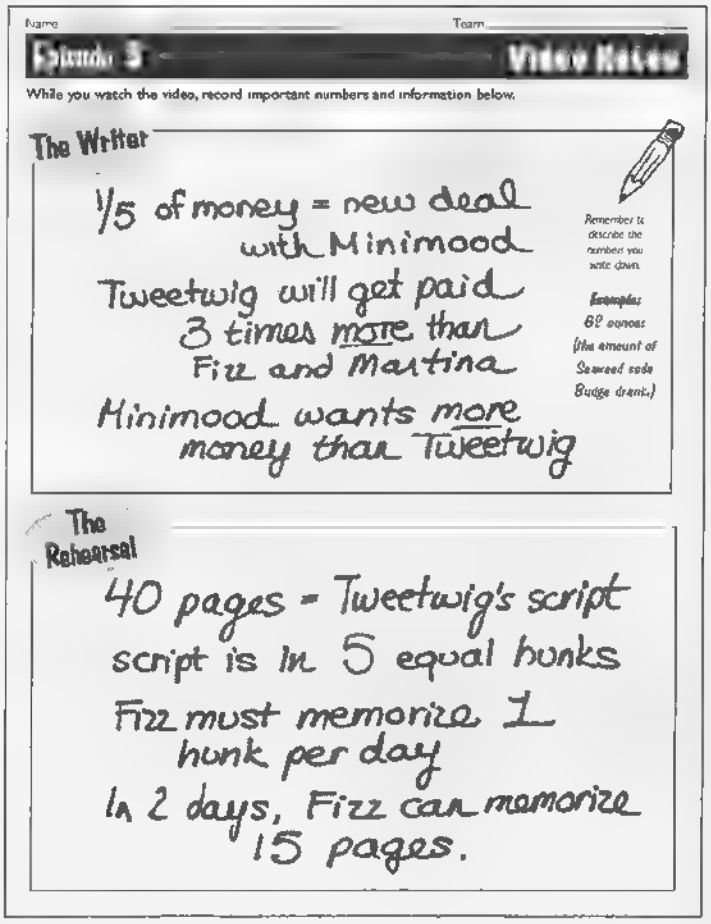
- Video Notes (page 57)
- Team Questions for Problem A (page 58)
- Team Questions for Problem B (page 59)

Follow-Up Activities

- Trivial Computes worksheet (page 60)
- The Estimation Game (no worksheets necessary)

Homework

- Practice Problem worksheet (page 61)
- Write-Your-Own-Story-Problem worksheet (page 68)


Name _____ Team _____

Episode 3 Video Notes

While you watch the video, record important numbers and information below.

The Writer

1/5 of money = new deal with Minimood

Tweetwig will get paid 3 times more than Fizz and Martina

Minimood wants more money than Tweetwig

Remember to describe the numbers you write down.

Examples: 82 ounces (the amount of Seaweed soda Budge drank.)

The Rehearsal

40 pages = Tweetwig's script

script is in 5 equal hunks

Fizz must memorize 1 hunk per day

In 2 days, Fizz can memorize 15 pages.

Teaching Suggestions

The problems in this episode can be used to introduce simple addition and subtraction with fractions. Below are some ideas to explore during (or following) Episode 3:

- **writing number sentences with fractions:** In Problem A, students discover that Tweetwig will get 3/5 of the money, leaving only 2/5 for Minimood. Ask students to suggest ways to describe this relationship in a number sentence. (i.e., 1 minus 3/5 equals 2/5).
- **renaming fractions:** Ask students if they can think of a way to describe the whole as a fraction (i.e., 5/5 instead of 1). Introduce renaming as a tool for adding fractions (i.e., renaming 1 as 5/5, so that you can write 5/5–3/5=2/5). Ask students to write a number sentence showing how much Minimood would get if Fizz was still writing the show (i.e., 5/5–1/5=4/5).

Note: The answer key on the opposite page shows completed worksheets. The solutions shown represent just one way to answer the questions. Different solutions may be just as appropriate.

Name _____ Team _____

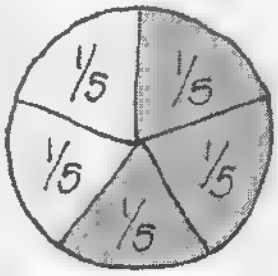
Episode 3 A — The Writer — Team Questions

1. What fraction of the money will Perry be offering to Tweetwig?

3/5 (number) of the money

3 × 1/5 = 3/5

2. Draw a picture of this math problem. Make sure to:
   (a) draw a whole and divide it into equal parts
   (b) shade in the part (or parts) that represents the answer to question 1
   (c) complete the sentences below. Do NOT use numbers in these sentences.



The whole represents: the amount of money coming into the show.

The shaded area represents: the share Perry will offer Tweetwig.

3. Write, in a complete sentence (or two), why your answer to question 1 is important for Minimood. Use the number 2/5 in your answer

Tweetwig will get 3/5 of the money. That leaves Minimood with only 2/5 (less than Tweetwig) so he'll have to cheat a little.

Name _____ Team _____

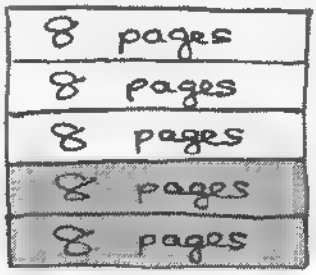
Episode 3 B — The Rehearsal — Team Questions

1. How many pages must Fizz memorize by the end of tomorrow?

16 (number) pages (units)

40 ÷ 5 = 8 8 × 2 = 16

2. Draw a picture of this math problem. Make sure to:
   (a) draw a whole and divide it into equal parts
   (b) shade in the part (or parts) that represents the answer to question 1
   (c) complete the sentences below. Do NOT use numbers in these sentences.



The whole represents: the number of pages in the whole script.

A single part represents: the number of pages Fizz must memorize each day.

3. Write, in a complete sentence (or two), why your answer to question 1 is important for Fizz. Use the number 15 in your answer

Fizz has been told to memorize 16 pages in 2 days. Since he can only memorize 15 pages, he'll have to quit the show.

Name _____ Team _____

Episode 3 — Trivial Computer

Write the Magic Number in the center circle below. Work with your teammates to answer all the questions. The numbers in the ovals should add up to the Magic Number

What popped out of the vacuum cleaner?
a statue of a half-grown rhino

If Mr. Tweetwig's script were 3/5 as long, how many pages would it be?
24 pages

Where does Martina throw the list of spelling words?
in the trash

If Mr Tweetwig were considering twice as many names for the show, how many would that be?
14 names

The Magic Number
548

If Fizz could only memorize 2/3 as many pages as he thought, how many could he memorize in 2 days?
10 pages

Whom does Trump call on the phone?
the Commissioner of Spelling Bees

If the rumored reward were 1/10 as big, how much money would it be?
$500

What does Fizz threaten to do if Mr Tweetwig's script is too long?
quit the show

Name _____ Team _____

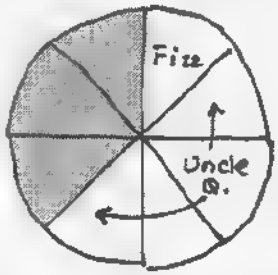
Episode 3 — Practice Problem

Fizz baked a raisin pie and cut it into 8 pieces. He took one piece and was eating it when Uncle Q. came by and said he wanted 4 times as much pie as Fizz, since he was 4 times as important. Then Fizz remembered that he promised to bring half the pie to the Young Botanists Club bake sale.

1. What fraction of the pie is left for the bake sale?

3/8 of the pie

2. Draw a picture of this math problem. Make sure to:
   (a) draw a whole and divide it into equal parts
   (b) shade in the part (or parts) that represents the answer to question 1
   (c) complete the sentences below. Do NOT use numbers in these sentences.



The whole represents: the number of slices in the whole pie.

The shaded area represents: the number of slices left for the bake sale.

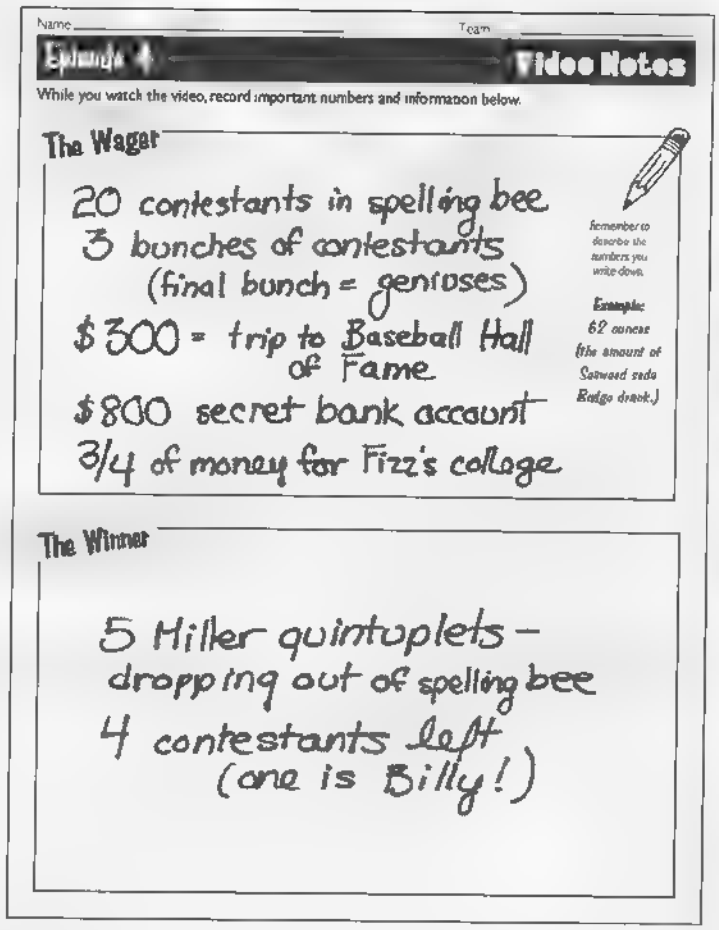
3. Write, in a complete sentence, what your answer to question 1 will mean for Fizz. Use the number 1/2 in your answer.

After Uncle Q. takes his share, there will be less than 1/2 a pie left, so Fizz won't have enough for the bake sale.

Episode 4: The Wager & The Winner

Summary

Minimood continues his efforts to undermine The Roy & Frieta Show by firing Fizz and Martina. Meanwhile, Billy Whippet competes in the Blue Falls Spelling Bee. Fans at the spelling bee recognize Fizz and Martina, and demand the return of the original Roy & Frieta Show.


Name _____ Team _____

Episode 4 Video Notes

While you watch the video, record important numbers and information below.

The Wager

20 contestants in spelling bee
3 bunches of contestants
(final bunch = geniuses)
$300 = trip to Baseball Hall of Fame
$800 secret bank account
3/4 of money for Fizz's college

Remember to describe the numbers you write down.

Example: 62 ounces (the amount of Seaweed soda Rodge drank.)

The Winner

5 Miller quintuplets – dropping out of spelling bee
4 contestants left (one is Billy!)

Video Length

- 9:40 minutes (Problem A. 4:54 minutes; Problem B: 2:45 minutes; Conclusion: 2:01 minutes)

Content

- Fraction concepts
- Computing fractional parts of whole numbers
- Multiplication and division with three-digit numbers

Worksheets

- Video Notes (page 63)
- Team Questions for Problem A (page 64)
- Team Questions for Problem B (page 65)

Follow-Up Activities

- Trivial Computes worksheet (page 66)
- The Estimation Game (no worksheets necessary)

Homework

- Practice Problem worksheet (page 67)
- Write-Your-Own-Story-Problem worksheet (page 68)

Teaching Suggestions

The problems in this episode can be used to further explore equivalency and (if you feel students are ready) to introduce multiplication of fractions. Below are some ideas to explore during (or following) Episode 4:

- **equivalency:** The *relationship* between the money in the secret bank account and the money saved for Fizz's education remains the same, no matter how much is in the bank account. Have students draw pictures in which the bank account contains $200, $1000, $8). Explore how the resulting fractions (150/200, 750/1000, 6/8) are all equivalent to 3/4. Challenge students to come up with other equivalents.
- **comparing fractions:** Which is bigger — 3/4 of $120 or 7/10 of $120? Can students find equivalents for each fraction that make this problem easy to solve (i.e., 15/20 vs. 14/20, 75/100 vs. 70/100)?
- **finding fractional parts of whole numbers:** In Problem A, students must find 3/4 of $800. Discuss students' methods for solving this problem (i.e., dividing 800 by 4, then multiplying by 3). Challenge students to find additional fractional parts of 800 (3/5, 1/10, 7/8). Use this discussion to introduce the algorithm for multiplying by a fraction.

Note: The answer key on the opposite page shows completed worksheets. The solutions shown represent just one way to answer the questions. Different solutions may be just as appropriate.

Name _____ Team _____

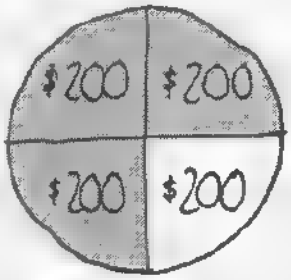
Episode 4 A — The Wager — Team Questions

1. How much money does Uncle Q. need to set aside for Fizz's college education?

600 (number) dollars (units)

$3/4 \times 800 = 600$

2. Draw a picture of this math problem. Make sure to:
   (a) draw a whole and divide it into equal parts
   (b) shade in the part (or parts) that represents the answer to question 1
   (c) complete the sentences below. Do NOT use numbers in these sentences.



The whole represents: the number of dollars in the secret bank account.

The shaded area represents: the number of dollars set aside for Fizz's college education.

3. Write, in a complete sentence (or two), why your answer to question 1 is important for Uncle Q. Use the number 300 in your answer.

After setting aside $600 for Fizz's education, Uncle Q. has $200 left. Since Billy's trip costs $300, Uncle Q. will have to use some of his own money.

Name _____ Team _____

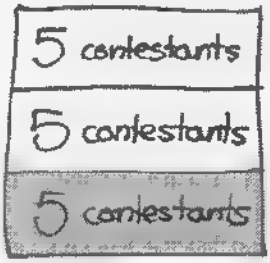
Episode 4 B — The Winner — Team Questions

1. How many contestants are there in Uncle Q.'s so-called "genius bunch"?

5 (number) contestants (units)

$20-5=15 \quad 15 \div 3 = 5$

2. Draw a picture of this math problem. Make sure to
   (a) draw a whole and divide it into equal parts
   (b) shade in the part (or parts) that represents the answer to question 1
   (c) complete the sentences below. Do NOT use numbers in these sentences.



The whole represents: the number of contestants left after the Millers got sick.

A single part represents: a single bunch of contestants.

3. Write, in a complete sentence (or two), why your answer to question 1 is important for Uncle Q. Use the number 4 in your answer.

Uncle Q. owes Billy a trip, because Billy was the 4th contestant left in the final bunch of 5 contestants.

Name _____ Team _____

Episode 4 — Trivial Competes

Write the Magic Number in the center circle below.
Work with your teammates to answer all the questions.
The numbers in the ovals should add up to the Magic Number.

Who won the spelling bee? Emily Blinker

If Fizz got to the auditorium twice as early as he had planned, how many minutes early would he be? 30 minutes

Who is The Roy & Freeta Show's mystery fan? Uncle Q.

If Uncle Q. paid for 2/3 of Billy's trip with his own money, how much would he spend? $200

The Magic Number: 1080

If Neptune flu medicine costs $20 per child, how much will the Millers need to spend? $100

Who is the Grand Beemaster? Mr. Tweetwig

If Fizz's secret bank account held $1000, how much would be reserved for Fizz's college education? $750

What word does Billy Whippet misspell? misspell

Name _____ Team _____

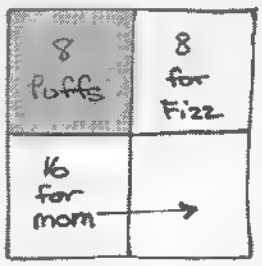
Episode 4 — Practice Problem

Martina bought a bag of 32 Malt Puffs. She promised to give half a bag to her mom, who is making Puffbars for her Astronomy Club. Martina also promised to give a quarter of a bag to Fizz for his science experiment. She's hoping there will be at least 5 Puffs left for her to eat.

1. How many Malt Puffs are left for Martina to eat?

8 (number) Puffs (units)

2. Draw a picture of this math problem. Make sure to:
   (a) draw a whole and divide it into equal parts
   (b) shade in the part (or parts) that represents the answer to question 1
   (c) complete the sentences below. Do NOT use numbers in these sentences.



The whole represents: the number of Malt Puffs in a bag.

The shaded area represents: the number of Malt Puffs left for Martina to eat.

3. Write, in a complete sentence, what your answer to question 1 will mean for Martina. Use the number 5 in your answer.

There will be more than 5 Puffs left over for Martina to eat!

Assessment

There are a number of ways to assess what students learn as they use *Fizz & Martina's Math Adventures.* In general, students' learning can be divided into three main areas:

1. Problem-Solving Skills

As they solve the math problems that come up in each episode, students must identify relevant information, choose the appropriate operation, and perform the necessary computations. To evaluate students' progress in these areas:

- Assign and evaluate the Practice Problem worksheet after each episode.
- After completing each episode, give students the opportunity to check and correct their work on the Team Questions worksheets. Then collect and evaluate these worksheets.

Sample answers for the Team Questions and Practice Problem worksheets are provided in the Content Guide & Answer Key (pages 27–35).

2. Mathematical Communication Skills

Throughout *Fizz & Martina's Math Adventures,* students are required to explain their mathematical strategies (in writing and orally). Assessing students' mathematical communication skills can be challenging. Students' explanations will vary widely, and evaluation can often feel a bit subjective. To help, we've included a set of guidelines (pages 38–39) that you can use to evaluate students' written and oral explanations. Feel free to adapt it to suit your own standards and needs.

3. Teamwork Skills

Fizz & Martina's Math Adventures is based on the philosophy that teamwork is an essential basic skill. Throughout the Fizz & Martina process, students practice listening to others, sharing ideas, and working towards a common goal. The Assessing Teamwork worksheet (page 37) was designed to help you evaluate these skills. You can use this worksheet in two ways:

- **Self-assessment:** Have students complete the worksheet after the first episode. Then use their responses to highlight areas of success and areas that need improvement. (Have them repeat the assessment after later episodes in order to track progress.)
- **Direct observation:** While students are working together on the Team Questions, circulate through the room to observe and evaluate each team's skills. Use the checklist as a guideline to help you evaluate each team.

Assessing Teamwork

Name _____ Date _____

Team Members: _____ _____

Team Color: _____

How well did your group work as a team? Rank your team on each of the following statements:

1. Everyone on the team listened carefully whenever a team member spoke.

- ❑ all the time
- ❑ most of the time
- ❑ sometimes
- ❑ not very often
- ❑ never

2. Everyone on the team participated in discussing and solving the problem

- ❑ all the time
- ❑ most of the time
- ❑ sometimes
- ❑ not very often
- ❑ never

3. Team members supported and encouraged each other.

- ❑ all the time
- ❑ most of the time
- ❑ sometimes
- ❑ not very often
- ❑ never

4. Team discussions helped me better understand the problem.

- ❑ all the time
- ❑ most of the time
- ❑ sometimes
- ❑ not very often
- ❑ never

5. Every team member was able to explain the team's answers without looking at written work.

- ❑ all the time
- ❑ most of the time
- ❑ sometimes
- ❑ not very often
- ❑ never

6. We were able to complete the Team Questions in the allotted time.

- ❑ all the time
- ❑ most of the time
- ❑ sometimes
- ❑ not very often
- ❑ never

Assessing Mathematical Communication

Uses clear, complete, and grammatical sentences (Team Questions 2 and 3)

Score	Description
2	All of the time
1	Some of the time
0	Not at all

Completes sentences using specific and accurate word phrases in place of numbers (Team Question 2)

Score	Description
2	All word phrases are specific and accurate *"The whole represents the number of dollars sent by the mystery fan."*
1	Some word phrases are vague or unclear; uses numbers along with word phrases *"The whole represents the number of dollars."* *"The shaded area represents the $2 Minimood owes them."*
0	Uses numbers instead of word phrases; no answer *"The whole represents $8. The shaded area represents $2."*

Describes rationale for elements of drawing (i.e., number of parts drawn, number of parts shaded) in context of story

Score	Description
2	Description is complete *"I divided a circle into 5 parts, and shaded in 1, because Mr. Minimood agreed to give Fizz and Martina one fifth of the money that came in."*
1	Description is partially complete *"I divided a circle into 5 parts, and shaded in 1, because they get one fifth."* *"I shaded in 1 part, because that's how much money Mr Minimood agreed to give Fizz and Martina."*
0	Description is minimal/nonexistent *"I divided a circle into 5 parts, and shaded in 1."*

Describes the consequences of the solution for the character(s) mentioned (Team Question 3)

Score	Description
2	Prediction clearly describes consequences for story/characters *"Mr Minimood is cheating Fizz and Martina because he only gave them $1, but he should have given them $2"*
1	Prediction is vague/incomplete *"One fourth of $8 is $2, so that's more than $1."*
0	Prediction is incorrect/not given

Uses the given number *in context* to support answer (Team Question 3)

Score	Description
2	Uses given number in context *"Fizz will be able to write a show each week because there are 7 days in a week, and Fizz only needs 6 days to write a show."*
1	Uses given number with minimal context/no context *"6 is less than 7, so Fizz has enough time to write the show."*
0	Does not use given number/no answer *"Fizz will be able to write a show each week."*

Math Curriculum Matrix

The curriculum matrix below shows how Tom Snyder Productions products address a range of math curriculum objectives.

	Number Sense & Computation					Statistics & Probability			Geometry				Measurement		Patterns & Relations			Misc.	
	Whole Number Operations	Fractions & Decimals	Ratios & Percentages	Denominations & Place Value	Estimation	Graphs & Charts	Data Collection & Analysis	Random Samples & Bias	Shapes	Scale & Proportion	Spatial Sense	Geometric Formulas	Standard Units	Distance, Rate & Time	Patterns	Functions	Algebra	Problem Solving	Mathematical Communication
The Graph Club K–4		•	•			•	•			•			•		•				
Neighborhood MapMachine 1–5										•	•		•						
Community Construction Kit 1–5									•	•									
Classroom StoreWorks 2–6	•	•		•			•						•						
Fizz & Martina's Math Adventures																			
• Buddies for Life 1 2	•				•													•	•
• Caves of Blue Falls 2–3	•				•													•	•
• Blue Falls Elementary 3–4	•				•													•	•
• Project Sphinx 4–5	•				•													•	•
• Hello Hollywood! 4–5	•		•		•													•	•
• Lights, Camera, Fractions! 5–6	•	•			•													•	•
Science Court: Statistics 4–6						•	•	•											
PrimeTime Math																			
• Emergency! 6–8		•	•			•	•							•				•	•
• Fire! 6–8	•											•		•			•	•	•
• Stakeout! 6–8		•	•			•	•											•	•
Graph Action Plus 6–8						•								•	•	•	•		•

Reproducibles

Name _____ Team _____

Intro Activity — The Big Freeze — Video Notes

While you watch the video, record important numbers and information in the blanks below.

Example Fizz moved to Blue Falls *4* (*number*) *years* (*units*) ago.

The Starship Fearless started out with a fuel level of _____ (*number*) heat crystals.

If the Starship's fuel level falls below 12 heat crystals, _____

_____ .

The Starship Fearless lost _____
when it was hit by a comet.

Name _____ Team _____

Intro Activity — The Big Freeze — Team Questions

1. How many heat crystals are left on the Starship after it is hit by a comet?

_____ _____
number *units*

2. Draw a picture of this math problem. Make sure to:
(a) draw a whole and divide it into equal parts
(b) shade in the part (or parts) that represents the answer to question 1
(c) complete the sentences below. Do NOT use numbers in these sentences.

The **whole** represents: _____

_____

_____

_____

The **shaded area** represents: _____

_____

_____

_____

3. Write, in a complete sentence (or two), why your answer to question 1 is important for the crew of Starship Fearless. Use the number 12 in your answer.

_____

_____

_____

_____

Name _____ Team _____

Episode 1 Video Notes

While you watch the video, record important numbers and information below.

The Big Break

Remember to describe the numbers you write down

Example:
62 ounces (the amount of Seaweed soda Budge drank)

The Small Take

Name _____ Team _____

Episode 1 A The Big Break Team Questions

1. How many days will it take Fizz to write one show?

_____ _____
number *units*

2. Draw a picture of this math problem. Make sure to:
(a) draw a whole and divide it into equal parts
(b) shade in the part (or parts) that represents the answer to question 1
(c) complete the sentences below. Do NOT use numbers in these sentences.

The **whole** represents: _____

_____

_____

_____

A **single part** represents: _____

_____

_____

_____

3. Write, in a complete sentence (or two), why your answer to question 1 is important for Fizz. Use the number 7 in your answer.

_____

_____

_____

_____

Name _____ Team _____

Episode 1 B — The Small Take — Team Questions

1. How many dollars should Minimood have given Fizz and Martina?

_____ _____
number *units*

2. Draw a picture of this math problem. Make sure to:
(a) draw a whole and divide it into equal parts
(b) shade in the part (or parts) that represents the answer to question 1
(c) complete the sentences below. Do NOT use numbers in these sentences.

The **whole** represents: _____

_____

_____

_____

The **shaded area** represents: _____

_____

_____

_____

3. Write, in a complete sentence (or two), why your answer to question 1 is important for Fizz and Martina. Use the number 1 in your answer.

_____

_____

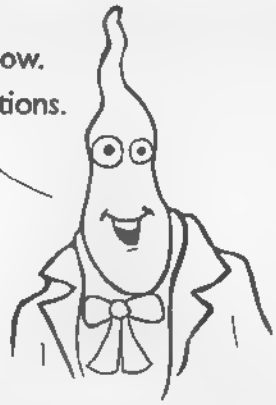
_____

_____

Name _____ Team _____

Episode 1 Trivial Computes

Write the Magic Number in the center circle below.
Work with your teammates to answer all the questions.
The numbers in the ovals should add up to the Magic Number.



What is Martina helping Billy Whippet with?

How much would 3 laugh machines cost?

What is the name of Roy's scary hand puppet?

If Fizz could write a show in half the time, how long would it take him?

The Magic Number

If a boo machine costs 1/5 of a laugh machine, how much does it cost?

What is the name of Mr. Minimood's favorite cable show?

If the mystery fan had sent half as much money, how much would that be?

What case is Frieta working on?

Name _____ Team _____

Episode 1 Practice Problem

In the grocery store, Fizz saw a big wheel of cheese that cost $24. "I don't need that much cheese for my Waffle Supreme recipe!" Fizz fumed, "plus I only have $5." The grocer told him she was about to slice the cheese into eighths, and he could buy one of those slices.

1. How much would each slice of cheese cost?

_____ _____
number *units*

2. Draw a picture of this math problem. Make sure to:
(a) draw a whole and divide it into equal parts
(b) shade in the part (or parts) that represents the answer to question 1
(c) complete the sentences below. Do NOT use numbers in these sentences.

The **whole** represents: _____

_____

_____

_____

A single part represents: _____

_____

_____

_____

3. Write, in a complete sentence, what your answer to question 1 will mean for Fizz. Use the number 5 in your answer.

_____

_____

_____

Name _____ Team _____

Episode 2 [redacted] Video Notes

While you watch the video, record important numbers and information below.

The New Deal

Remember to describe the numbers you write down.

Example:
62 ounces (the amount of Seaweed soda Budge drank)

The Shady Deal

Name _____ Team _____

Episode 2 A The New Deal Team Questions

1. How many dollars will Fizz and Martina get from this latest mystery check?

_____ _____
number *units*

2. Draw a picture of this math problem. Make sure to:
(a) draw a whole and divide it into equal parts
(b) shade in the part (or parts) that represents the answer to question 1
(c) complete the sentences below. Do NOT use numbers in these sentences.

The **whole** represents: _____

_____

_____

_____

The **shaded area** represents: _____

_____

_____

_____

3. Write, in a complete sentence (or two), why your answer to question 1 is important for Fizz and Martina. Use the number 5 in your answer.

_____

_____

_____

_____

Name _____ Team _____

Episode 2 B The Shady Deal Team Questions

1. How many words does Trump owe Fizz and Martina?

_____ _____
number *units*

2. Draw a picture of this math problem. Make sure to:
(a) draw a whole and divide it into equal parts
(b) shade in the part (or parts) that represents the answer to question 1
(c) complete the sentences below. Do NOT use numbers in these sentences.

The **whole** represents: _____

_____

_____

_____

A **single part** represents: _____

_____

_____

_____

3. Write, in a complete sentence (or two), why your answer to question 1 is important for Billy. Use the number 60 in your answer.

_____

_____

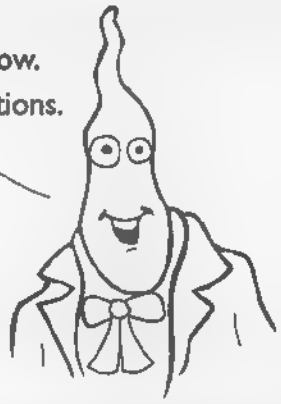
_____

_____

Name _____ Team _____

Episode 2 [redacted] Trivial Computes

Write the Magic Number in the center circle below.
Work with your teammates to answer all the questions.
The numbers in the ovals should add up to the Magic Number.



What is the name of Minimood's assistant?

How many ounces of Diet Frezno are in 1/3 of a portion?

Where must Fizz and Martina meet Trump after their show?

If Fizz were only half as mad, he'd be madder than (at most) how many wet roosters?

How many times must Fizz and Martina mention Trump's garage to get all the words on the list?

What subject does Frieta teach?

If the mystery fan sent $45, how much would Fizz and Martina get, according to their new deal?

Which word did Billy misspell on his note?

Name _____ Team _____

Episode 2 Practice Problem

Lydia Lo, owner of the Blue Falls Theater, asked Fizz and Martina to perform The Roy & Frieta Show live. She promised to give them 2/3 of any money that came in. When the show was over, Lydia had sold $270 worth of tickets. She gave Fizz and Martina $150. Are they getting their fair share?

1. How much money should Fizz and Martina be getting?

_____ _____ _____
number *units*

2. Draw a picture of this math problem. Make sure to:
(a) draw a whole and divide it into equal parts
(b) shade in the part (or parts) that represents the answer to question 1
(c) complete the sentences below. Do NOT use numbers in these sentences.

The **whole** represents: _____

_____

_____

The **shaded area** represents: _____

_____

_____

_____

3. Write, in a complete sentence, what your answer to question 1 will mean for Fizz and Martina. Use the number 150 in your answer.

_____

_____

_____

Name _____ Team _____

Episode 3 [redacted] Video Notes

While you watch the video, record important numbers and information below.

The Writer

Remember to describe the numbers you write down

Example:
62 ounces (the amount of Seaweed soda Budge drank)

The Rehearsal

Name _____ Team _____

Episode 3 A The Writer Team Questions

1. What fraction of the money will Perry be offering to Tweetwig?

_____ of the money
number

2. Draw a picture of this math problem. Make sure to:
(a) draw a whole and divide it into equal parts
(b) shade in the part (or parts) that represents the answer to question 1
(c) complete the sentences below. Do NOT use numbers in these sentences.

The **whole** represents: _____

_____

_____

_____

The **shaded area** represents: _____

_____

_____

_____

3. Write, in a complete sentence (or two), why your answer to question 1 is important for Minimood. Use the number 2/5 in your answer.

_____

_____

_____

_____

Name _____ Team _____

Episode 3 B The Rehearsal Team Questions

1. How many pages must Fizz memorize by the end of tomorrow?

_____ _____
number *units*

2. Draw a picture of this math problem. Make sure to:
(a) draw a whole and divide it into equal parts
(b) shade in the part (or parts) that represents the answer to question 1
(c) complete the sentences below. Do NOT use numbers in these sentences.

The **whole** represents: _____

_____

_____

_____

A **single part** represents: _____

_____

_____

_____

3. Write, in a complete sentence (or two), why your answer to question 1 is important for Fizz. Use the number 15 in your answer.

_____

_____

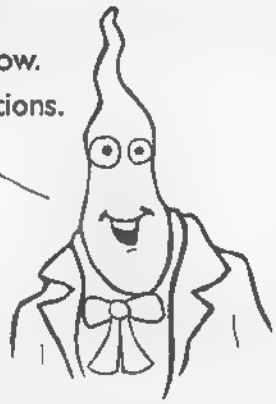
_____

_____

Name _____ Team _____

Episode 3 Trivial Computes

Write the Magic Number in the center circle below.
Work with your teammates to answer all the questions.
The numbers in the ovals should add up to the Magic Number.



What popped out of the vacuum cleaner?

If Mr. Tweetwig's script were 3/5 as long, how many pages would it be?

Where does Martina throw the list of spelling words?

If Mr. Tweetwig were considering twice as many names for the show, how many would that be?

The Magic Number

If Fizz could only memorize 2/3 as many pages as he thought, how many could he memorize in 2 days?

Whom does Trump call on the phone?

If the rumored reward were 1/10 as big, how much money would it be?

What does Fizz threaten to do if Mr. Tweetwig's script is too long?

Name _____ Team _____

Episode 3 Practice Problem

Fizz baked a raisin pie and cut it into 8 pieces. He took one piece and was eating it when Uncle Q. came by and said he wanted 4 times as much pie as Fizz, since he was 4 times as important. Then Fizz remembered that he promised to bring half the pie to the Young Botanists Club bake sale.

1. What fraction of the pie is left for the bake sale?

_____ of the pie

2. Draw a picture of this math problem. Make sure to:
(a) draw a whole and divide it into equal parts
(b) shade in the part (or parts) that represents the answer to question 1
(c) complete the sentences below. Do NOT use numbers in these sentences.

The **whole** represents: _____

_____

_____

_____

The **shaded area** represents: _____

_____

_____

_____

3. Write, in a complete sentence, what your answer to question 1 will mean for Fizz. Use the number 1/2 in your answer.

_____

_____

_____

Name _____ Team _____

Episode 4 [redacted] Video Notes

While you watch the video, record important numbers and information below.

The Wager

Remember to describe the numbers you write down.

Example:
62 ounces (the amount of Seaweed soda Budge drank)

The Winner

Name _____ Team _____

Episode 4 A The Wager Team Questions

1. How much money does Uncle Q. need to set aside for Fizz's college education?

_____ _____
number *units*

2. Draw a picture of this math problem. Make sure to:
(a) draw a whole and divide it into equal parts
(b) shade in the part (or parts) that represents the answer to question 1
(c) complete the sentences below. Do NOT use numbers in these sentences.

The **whole** represents: _____

_____

_____

_____

The **shaded area** represents: _____

_____

_____

_____

3. Write, in a complete sentence (or two), why your answer to question 1 is important for Uncle Q. Use the number 300 in your answer.

_____

_____

_____

_____

Name _____ Team _____

Episode 4 B The Winner Team Questions

1. How many contestants are there in Uncle Q.'s so-called "genius bunch"?

_____ _____
number *units*

2. Draw a picture of this math problem. Make sure to:
(a) draw a whole and divide it into equal parts
(b) shade in the part (or parts) that represents the answer to question 1
(c) complete the sentences below. Do NOT use numbers in these sentences.

The **whole** represents: _____

_____

_____

_____

A **single part** represents: _____

_____

_____

_____

3. Write, in a complete sentence (or two), why your answer to question 1 is important for Uncle Q. Use the number 4 in your answer.

_____

_____

_____

_____

Name _____ Team _____

Episode 4 Trivial Computes

Write the Magic Number in the center circle below.
Work with your teammates to answer all the questions.
The numbers in the ovals should add up to the Magic Number.

Who won the spelling bee?

If Fizz got to the auditorium twice as early as he had planned, how many minutes early would he be?

Who is The Roy & Frieta Show's mystery fan?

If Uncle Q. paid for 2/3 of Billy's trip with his own money, how much would he spend?

The Magic Number

If Neptune flu medicine costs $20 per child, how much will the Millers need to spend?

Who is the Grand Beemaster?

If Fizz's secret bank account held $1000, how much would be reserved for Fizz's college education?

What word does Billy Whippet misspell?

Name _____ Team _____

Episode 4 Practice Problem

Martina bought a bag of 32 Malt Puffs. She promised to give half a bag to her mom, who is making Puffbars for her Astronomy Club. Martina also promised to give a quarter of a bag to Fizz for his science experiment. She's hoping there will be at least 5 Puffs left for her to eat.

1. How many Malt Puffs are left for Martina to eat?

_____ _____
number *units*

2. Draw a picture of this math problem. Make sure to:
(a) draw a whole and divide it into equal parts
(b) shade in the part (or parts) that represents the answer to question 1
(c) complete the sentences below. Do NOT use numbers in these sentences.

The **whole** represents: _____

_____

_____

_____

The **shaded area** represents: _____

_____

_____

_____

3. Write, in a complete sentence, what your answer to question 1 will mean for Martina. Use the number 5 in your answer.

_____

_____

_____

Name _____ Team _____

Write Your Own Story Problem

Write and illustrate a problem you've had to solve in your own life that involved fractions. Or just make up a story problem that stars you, your friends, or Fizz and Martina.

Question: _____

Answer (in complete sentences): _____

Award Card

Fizz

Award Card

Martina

Award Card

Mr. Minimood

Award Card

Trump

Award Card

The Perrymeister

Award Card

Virginia

Award Card

Emily Blinker

Award Card

Mr. Tweetwig

Award Card

Billy Whippet

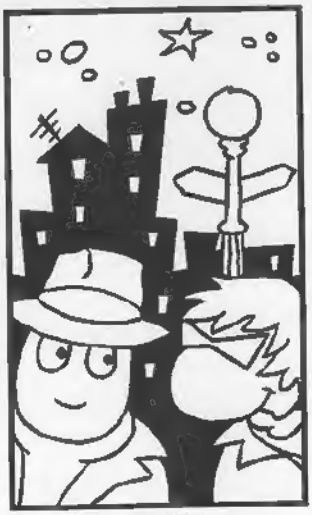
Award Card

Frieta

Award Card

Roy

Award Card



Roy & Frieta

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- Simple story problems
- Estimating quantities

Grades 3-4 Blue Falls Elementary

- Multiplication facts
- Addition and subtraction
- 1- and 2-step story problems
- Computational estimation

Grades 4-5 Project Sphinx

- Multiplication and division
- 1- and 2-step story problems
- Computational estimation

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